CLAIMS

1. A method of power control in a mobile telecommunications network, the method comprising the steps of:

calculating a signal strength reference value for each of a plurality of channels in use based on a previously calculated value for that channel;

maintaining the calculated signal strength reference value for a channel at or above a predetermined minimum signal strength reference value; and

determining a signal strength reference value to be used for all of said plurality of channels in use, as the highest of all of the calculated signal strength reference values.

2. The method as claimed in claim 1, wherein the signal strength reference value for a channel is a Signal-to-Interference Ratio (SIR) reference value.

3. The method as claimed in claim 1, further comprising incrementally increasing or decreasing the signal strength reference value dependent upon a quality criteria check.

4. The method as claimed in claims 2, wherein the step of calculating a SIR reference value for each of the plurality of channels in use is performed by applying the algorithm:

$$SIR_r(k) = kp * e(k) + ki * I(k)$$

where k denotes block number, $SIR_r(k)$ denotes the SIR reference for block k, kp and ki are parameters which control algorithm convergence speed and stability and $I(k+1) = I(k) + e(k)$.

5. The method as claimed in claim 4, wherein e(k) takes different values dependent upon whether a predetermined quality criterion is met, such that:

$$e(k) = -BLER_r \quad \text{if quality criterion met,}$$
$$e(k) = 1 - BLER_r \quad \text{if quality criterion not met}$$

where $BLER_r$ refers to the BLER reference.

6. The method as claimed in claim 4, wherein the parameters:

$$kp = 0$$
$$ki = SIR_{inc} / (1 - BLER_r)$$

are used, where SIR_{inc} refers to an incremental increase in the SIR reference.

7. The method as claimed in claims 2, 4, 5 and 6, wherein the step of maintaining the calculated signal strength reference value for a channel is determined via a Proportional Integral (PI) algorithm and characterised by:

$$SIR_r(l, k+1) := \begin{cases} SIR_r(l,k) + SIR_{inc} & \text{if quality criterion not met,} \\ SIR_r(l,k) - \dfrac{BLER_r(l)}{1 - BLER_r(l)} SIR_{inc} & \text{if quality criterion met.} \end{cases}$$

where $SIR_r(l,k)$ denotes the SIR reference for channel $l=1,\ldots,N$ at block k. $BLER_r(l)$ refers to the BLER reference for channel l.

8. The method as claimed in claim 7, wherein the quality criterion check is based on a Bit Error Rate (BER) reference value.

9. The method as claimed in claim 7, wherein the quality criterion check is based on a Cyclic Redundancy Check (CRC) reference value.

10. The method as claimed in claim 7, comprising calculating an initial SIR reference value $SIR_r(1, 0)$ for each of the plurality of channels in use for an initial block k=0 as:

$$SIR_r(l,0)=\frac{1}{b_2}(\log_{10}(BLER_r(l))-a_2)$$

where a_2 and b_2 are channel model parameters.

11. The method as claimed in claims 1 to 10, wherein the mobile telecommunications network uses WCDMA.

12. A mobile station for use in a telecommunications network, wherein the mobile station comprises means for performing power control by a method comprising:

calculating a signal strength reference value for each of a plurality of channels in use based on a previously calculated value for that channel;

maintaining the calculated signal strength reference value for a channel at or above a predetermined minimum signal strength reference value; and

determining a signal strength reference value to be used for all of said plurality of channels in use, as the highest of all of the calculated signal strength reference values.

13. The mobile station as claimed in claim 12, wherein the step of maintaining the calculated signal strength reference value for a channel is determined via a Proportional Integral (PI) algorithm and characterised by:

$$SIR_r(l,k+1):=\begin{cases} SIR_r(l,k)+SIR_{inc} & \text{if quality criterion not met,} \\ SIR_r(l,k)-\dfrac{BLER_r(l)}{1-BLER_r(l)}SIR_{inc} & \text{if quality criterion met.} \end{cases}$$

where $SIR_r(l,k)$ denotes the SIR reference for channel $l=1,\ldots,N$ at block k. $BLER_r(l)$ refers to the BLER reference for channel l.

14. The mobile station as claimed in claims 12 and 13, wherein the mobile telecommunications network uses WCDMA.

15. A base station for use in a telecommunications network, wherein the base station comprises means for performing power control by a method comprising:

calculating a signal strength reference value for each of a plurality of channels in use based on a previously calculated value for that channel;

maintaining the calculated signal strength reference value for a channel at or above a predetermined minimum signal strength reference value; and

determining a signal strength reference value to be used for all of said plurality of channels in use, as the highest of all of the calculated signal strength reference values.

16. The base station as claimed in claim 15, wherein the step of maintaining the calculated signal strength reference value for a channel is determined via a Proportional Integral (PI) algorithm and characterised by:

$$SIR_r(l,k+1):=\begin{cases} SIR_r(l,k)+SIR_{inc} & \text{if quality criterion not met,} \\ SIR_r(l,k)-\dfrac{BLER_r(l)}{1-BLER_r(l)}SIR_{inc} & \text{if quality criterion met.} \end{cases}$$

where SIR_r (l,k) denotes the SIR reference for channel l=1,...,N at block k. $BLER_r(l)$ refers to the BLER reference for channel l.

17. The base station as claimed in claims 15 and 16, wherein the mobile telecommunications network uses WCDMA.

18. A telecommunications network, comprising means for performing power control by a method comprising:

calculating a signal strength reference value for each of a plurality of channels in use based on a previously calculated value for that channel;

maintaining the calculated signal strength reference value for a channel at or above a predetermined minimum signal strength reference value; and

determining a signal strength reference value to be used for all of said plurality of channels in use, as the highest of all of the calculated signal strength reference values.

19. The telecommunications network as claimed in claim 18, wherein the step of maintaining the calculated signal strength reference value for a channel is determined via a Proportional Integral (PI) algorithm and characterised by:

$$SIR_r(l,k+1) := \begin{cases} SIR_r(l,k) + SIR_{inc} & \text{if quality criterion not met,} \\ SIR_r(l,k) - \dfrac{BLER_r(l)}{1-BLER_r(l)} SIR_{inc} & \text{if quality criterion met.} \end{cases}$$

where SIR_r (l,k) denotes the SIR reference for channel l=1,...,N at block k. $BLER_r(l)$ refers to the BLER reference for channel l.

20. The telecommunications network as claimed in claims 18 and 19, wherein the mobile telecommunications network uses WCDMA.